upon the revolving shaft, so that the heat must have resulted wholly from the destruction of mechanical motion. The immense moving power of the wheel, instead of being directed wholly into its appropriate channel, was in part transformed into that mode of atomic motion called heat. In the second place, the temperature attained was at least the welding-point of iron, and this, too, although the heated metal was immersed in a stream of flowing water. It is undoubtedly true, that the sphèroidal condition of the water would greatly retard the loss of heat, but still the loss must have been exceedingly rapid. Now the loss, even at the highest temperature attained, must have been fully supplied by the heat generated during the same time; and this must, therefore, have been evolved with equal rapidity at the surfaces of friction. No change in the molecular condition of the iron, and no abrasion of the metal, is at all sufficient to account for this continuous, prolonged, and immensely rapid evolution of heat, and the facts force upon us the conclusion, that the destruction of mechanical motion is the one and only efficient cause. Moreover, if we admit the generally received principle of mechanics, that motion cannot be annihilated, the conclusion that heat is a mode of motion is equally irresistible. Lastly, it is evident that the facts here stated perfectly accord with the well-known experiments of Rumford and Davy; only since the moving power of the Merrimack turbine is so much greater than that employed by these distinguished experimentalists, the results which I have had the pleasure of exhibiting are more striking and conclusive than any which have been previously obtained.

Five hundred and fifty-second Meeting.

May 9, 1865. — MONTHLY MEETING.

The PRESIDENT in the chair.

The Recording Secretary read letters relative to exchanges. The proposition of the Rumford Committee, that the Rumford Premium be awarded to Professor Treadwell for his improvements in the management of heat, which had been referred to this meeting, was then brought up for discussion, and was referred to the Annual Meeting for the action of the Academy.